



Armed Forces College of Medicine AFCM



Posterior Abdominal Wall Aorta IVC

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INTENDED LEARNING OBJECTIVES (ILO)



By the end of this lecture the student will be able to:

- Describe the arrangement, **nerve supply and actions of posterior abdominal wall muscles**
- Describe the formation & **branches of the lumbar plexus**
- **Describe abdominal aorta** : origin , termination, branches and important relations.
- **Describe Inferior vena cava** : origin , termination, tributaries and important relations

Key points



- Posterior abdominal wall muscles & Lumbar plexus
- Abdominal aorta
- IVC

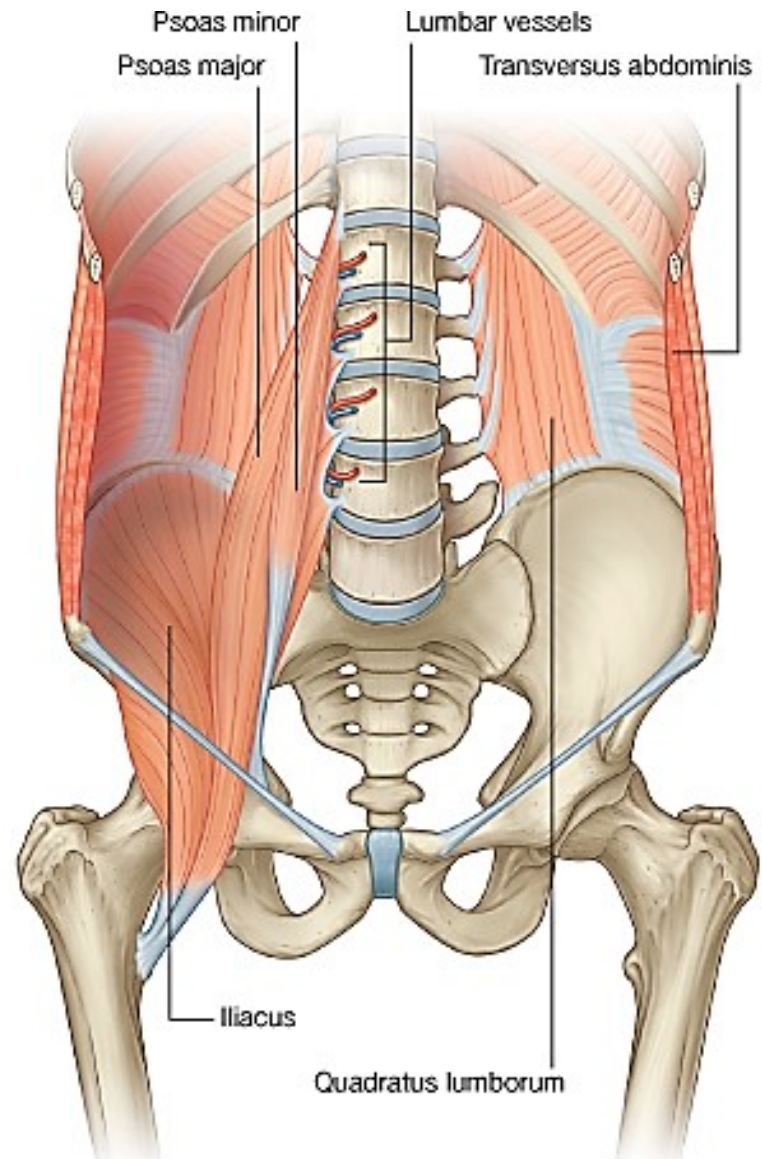
Posterior Abdominal Wall

Muscles:

Psoas Major & Minor

Quadratus Lumborum

Iliacus



Psoas Major Muscle

Origin

- Sides of bodies
- Transverse processes
- The intervertebral discs
Of T12, L1 to L5

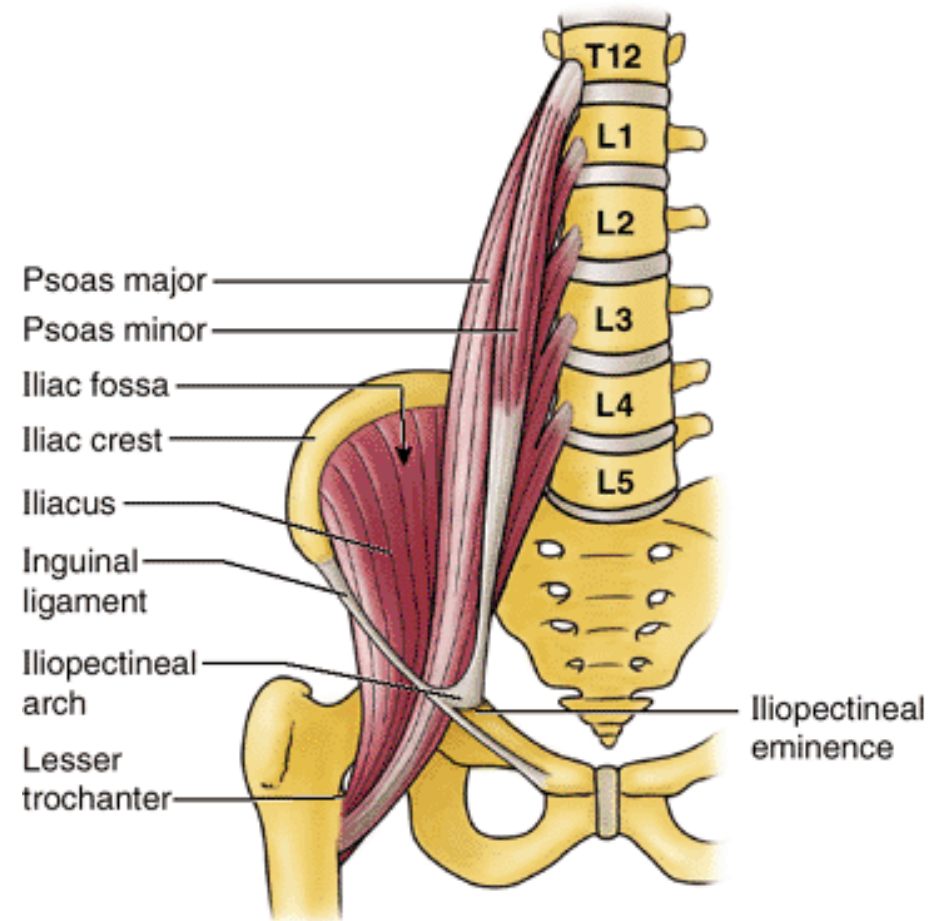
Insertion

iliacus into lesser trochanter of femur

Nerve Supply:
Anterior rami of L2,3,4

Action:

**Flexion of thigh on the trunk
or flexion of trunk on thigh as
Sitting up from lying position**



Anterior view

Clinically oriented Anatomy, 5th edition, Keith Moore

Iliacus Muscle

Origin

- iliac fossa

Insertion

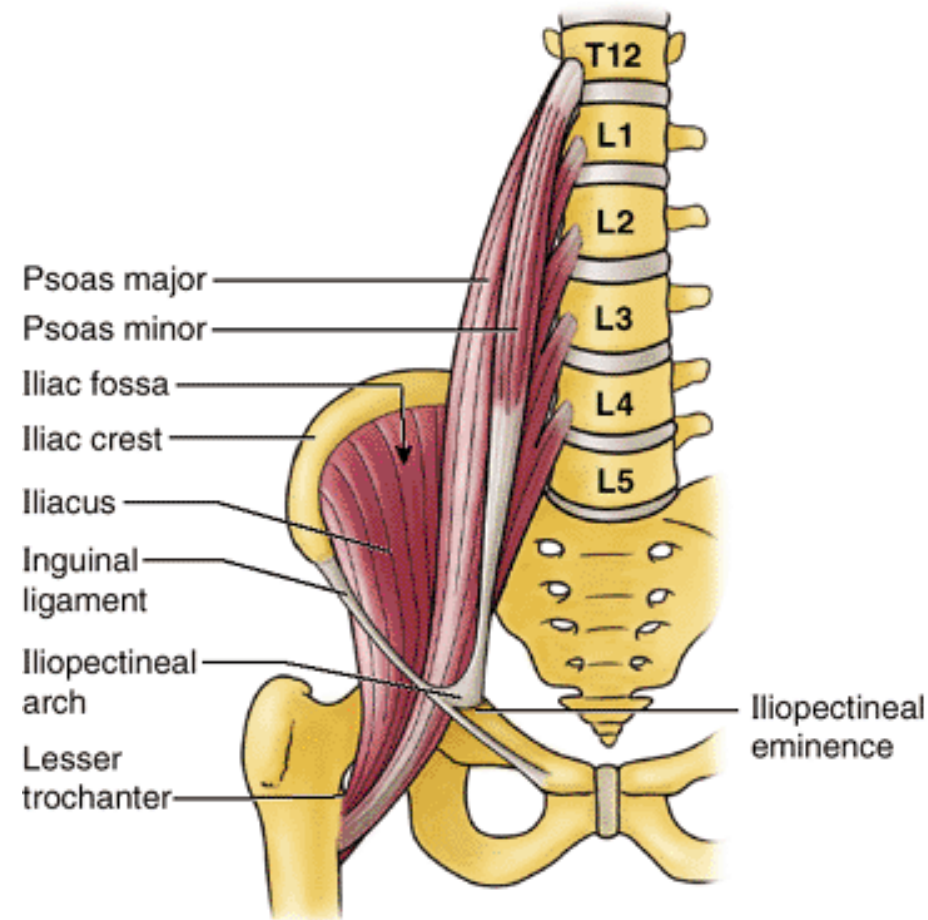
With psoas major into lesser trochanter of femur

Nerve Supply

Femoral nerve

Action

Flexion of thigh on the trunk
or flexion of trunk on thigh as
Sitting up from lying position



Anterior view

Clinically oriented Anatomy, 5th edition, Keith Moore

Psoas Minor Muscle

Origin

Sides of bodies of T12 and L1 vertebrae and intervening intervertebral disc

Insertion

iliopectineal eminence

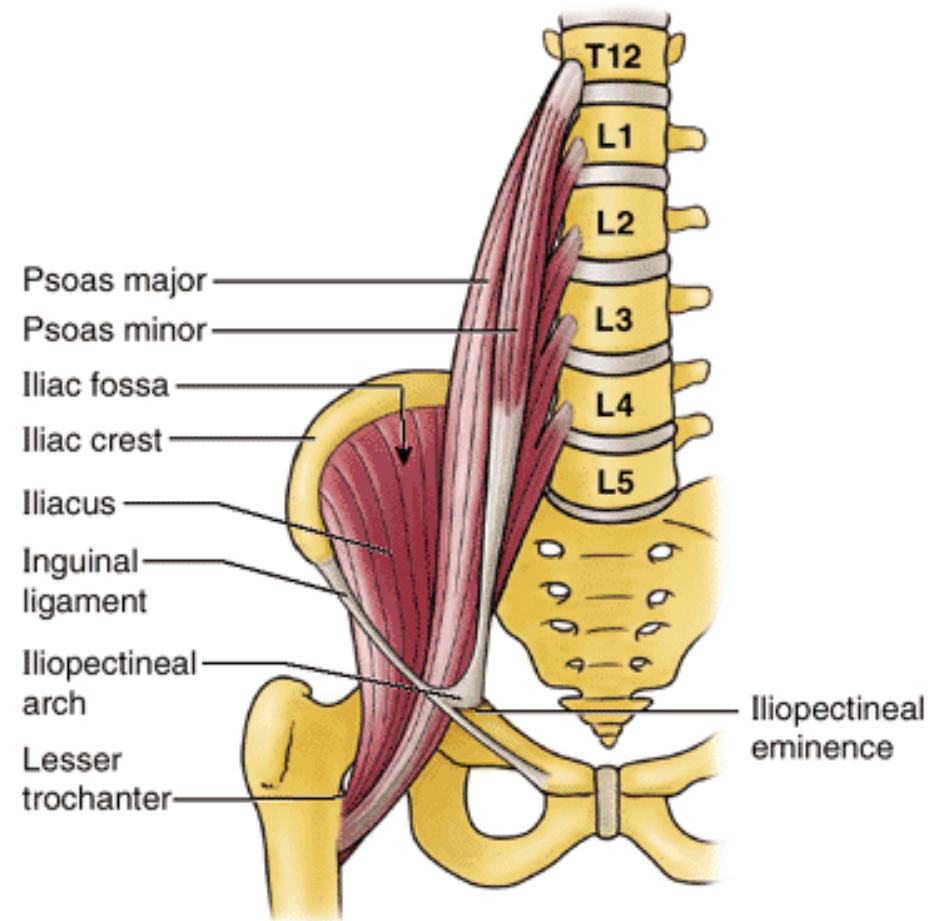
Nerve Supply:

Anterior rami of L1

Action:

Flexion of trunk

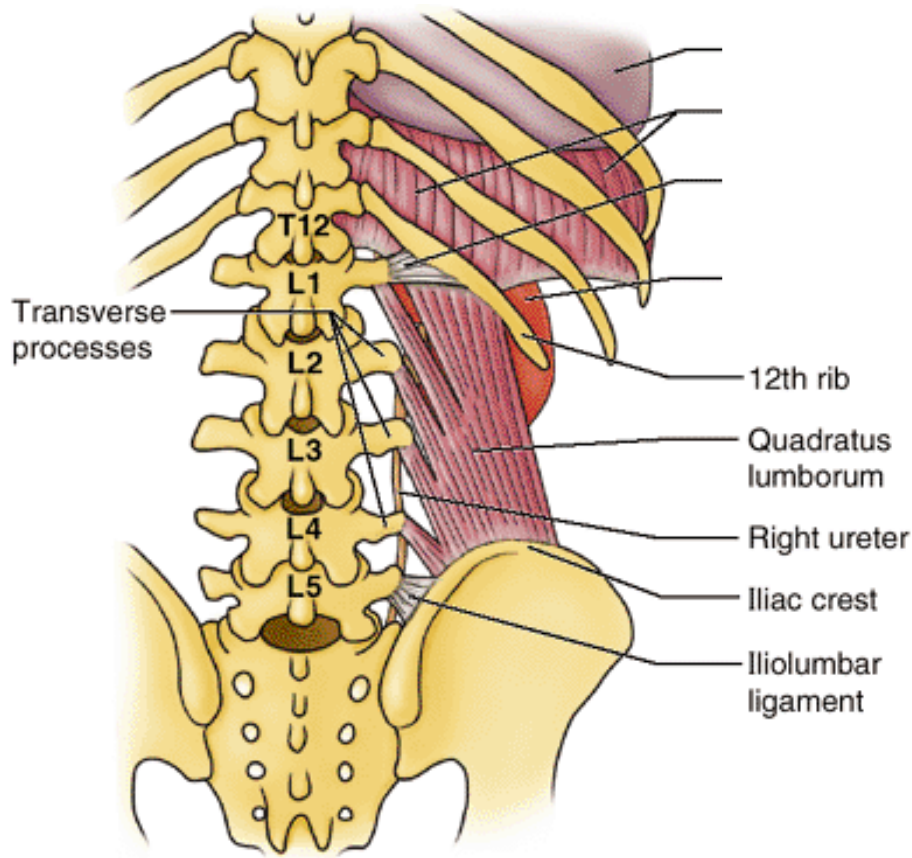
Note: Psoas minor may be absent



Anterior view

Clinically oriented Anatomy, 5th edition, Keith Moore

Quadratus Lumborum Muscle



Posterior view

Clinically oriented Anatomy, 5th edition, Keith Moore

Origin

- iliolumbar ligament,
- iliac crest

Insertion

- Tip of transverse processes of L1 to L4
- inferior border of rib 12

Nerve Supply

anterior rami of T12 and L1 to L4

Action

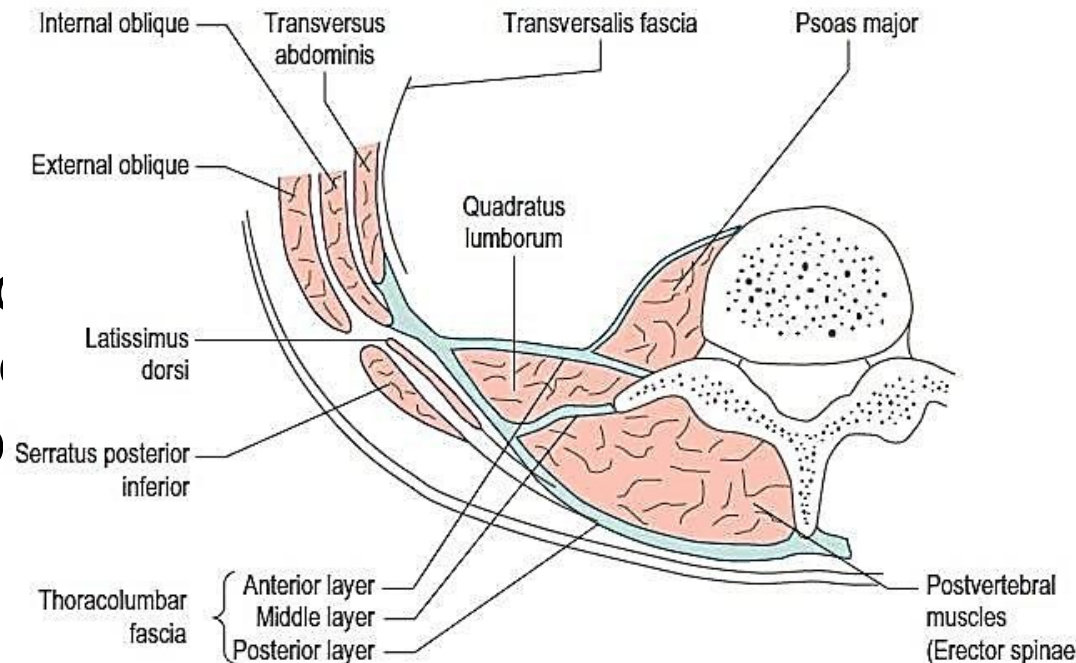
**Depress and stabilize rib XII
and some lateral flexion of
trunk**

Fascia on the posterior abdominal wall

- Psoas fascia
- Fascia iliaca
- Thoracolumbar fascia
- This fascia covers the deep muscles of the back and the trunk.
- In the lumbar region, it is very thick well-defined into 3 layers:

1. The posterior layer:

Passes **behind** the erector spinae muscle and is attached to the **spines** of the lumbar and sacral vertebrae.



fascia on the posterior abdominal wall

2. Middle layer:

covers the **back** of the **quadratus lumborum** m. & attached to the **tips** of the transverse processes of the lumbar vertebrae.

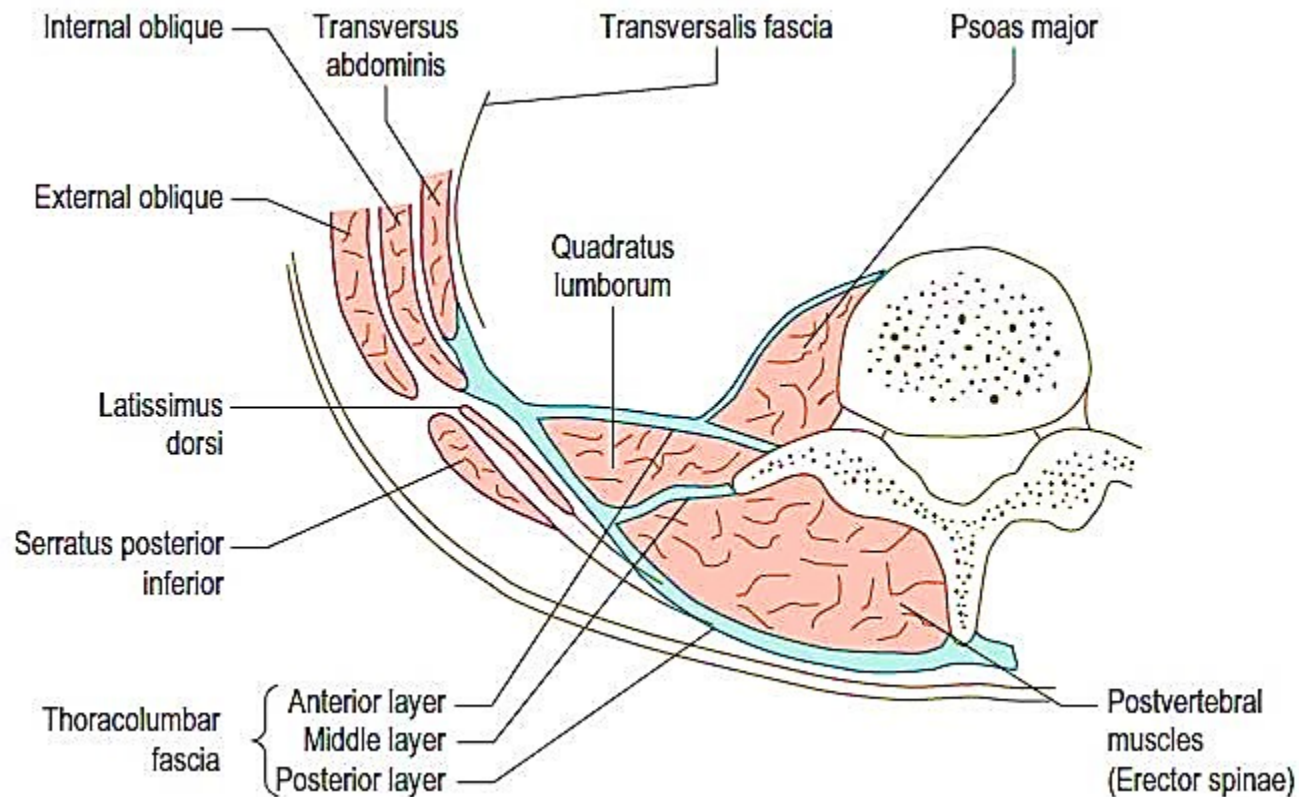
3. The anterior layer:

In front of the **quadratus lumborum** and is attached medially to **anterior surfaces** of the transverse processes of the lumbar vertebrae



Fascia on the posterior abdominal wall

- Laterally, the three layers form the aponeurotic origin of transversus abdominis and internal oblique.



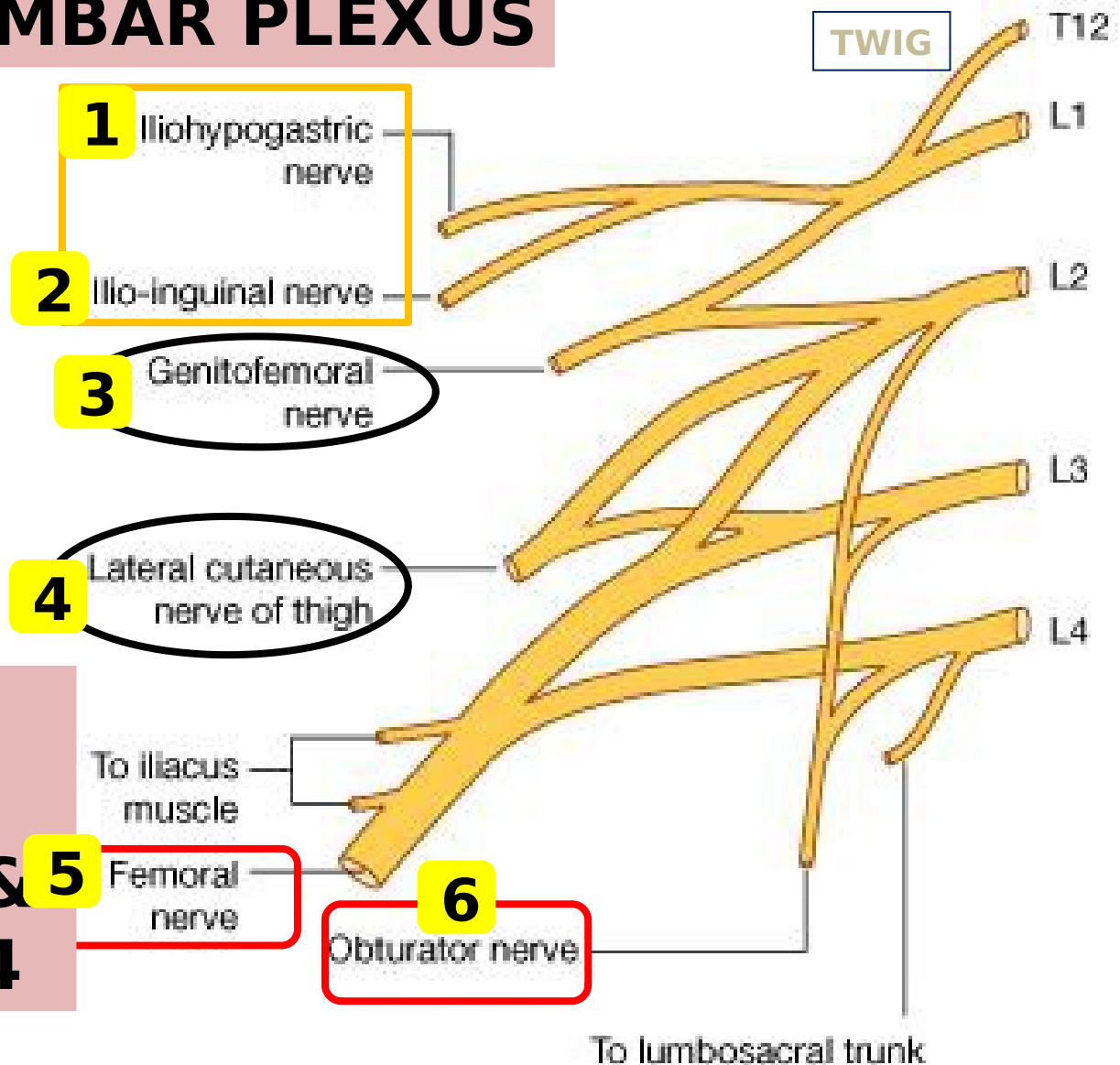
LUMBAR PLEXUS

Formation:
WITHIN THE
SUBSTANCE
OF PSOAS
MAJOR
MUSCLE

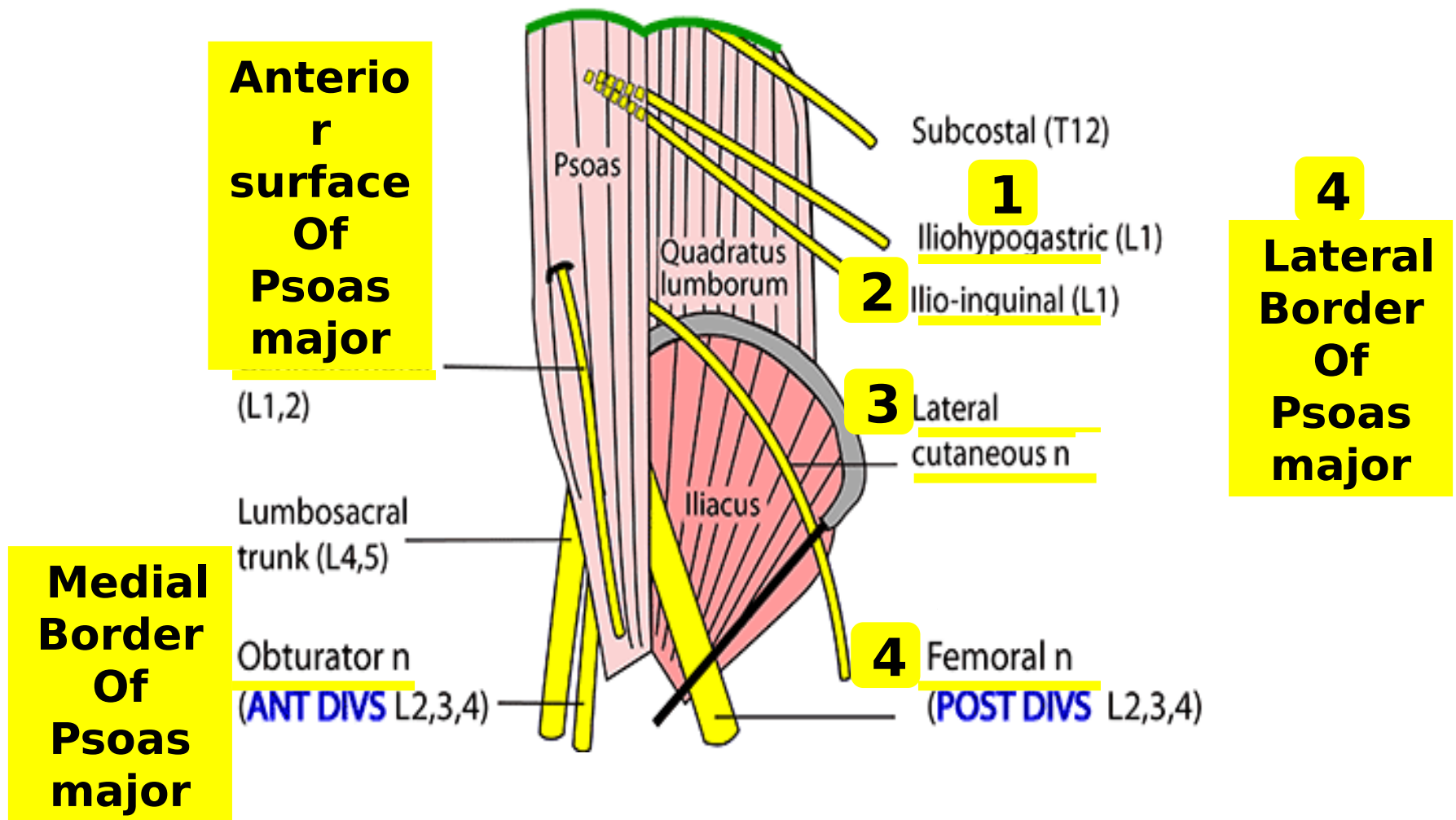
From ventral
rami of upper 3
lumbar nerves &
upper part of L4

Branches
(6)

New Five Year Program



Arrangement of the lumbar plexus branches



https://www.google.com/url?sa=i&url=https%3A%2F%2Fepomedicine.com%2Fmedical-students%2Flumbosacral-plexus-simplified%2F&psig=AOvVaw05bi_D7koXuGFRflpQtPY-&ust=1574067879861000&source=images&cd=vfe&ved=2ahUKEwjh9vX38fDIAhVCQRoKHTdDBUQQr4kDegUIARD5AQ

Quiz 1 (Posterior abdominal wall & lumbar Plx.)



One of the following nerves is related to medial border of psoas major:

- a. Ilioinguinal**
- b. Iliohypogastric**
- c. Obturator**
- d. Lateral cutaneous nerve of thigh**
- e. Femoral**

Abdominal Aorta

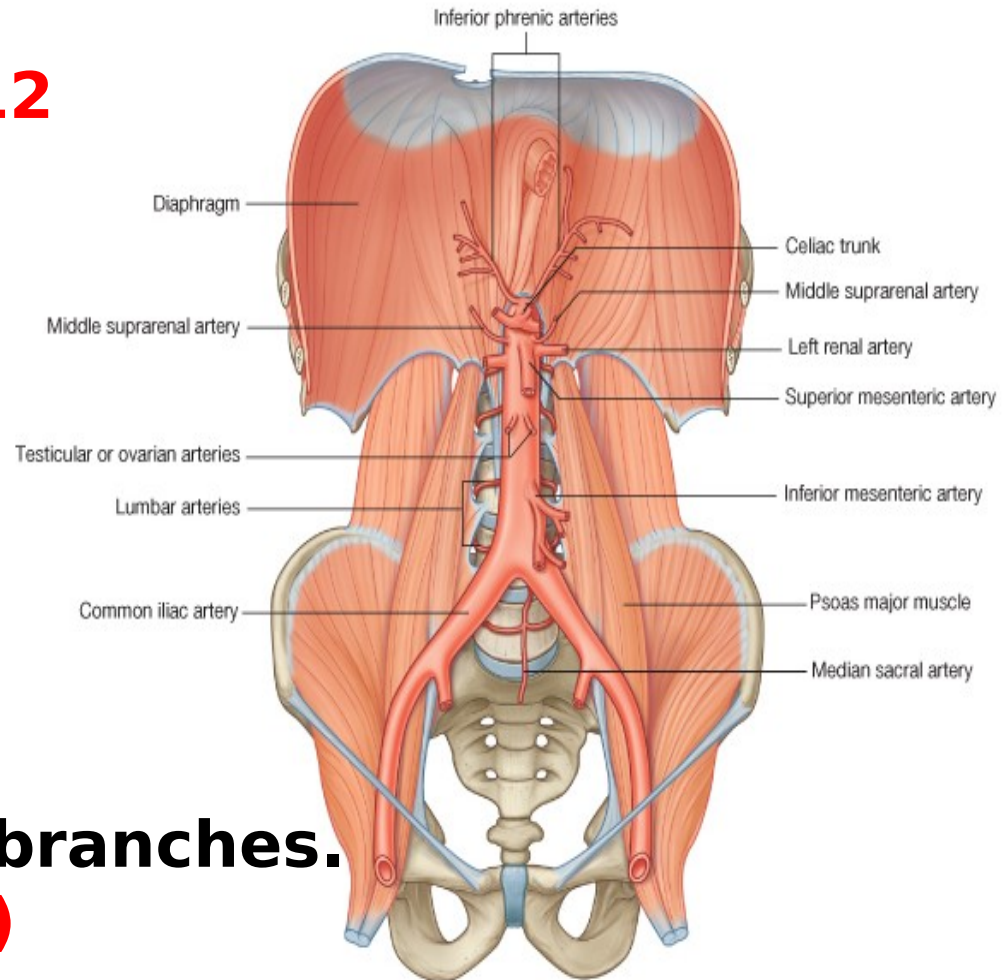
beginning:

in the median plane at **T12**
at aortic opening of
diaphragm

- It descends in front of
vertebral bodies with

termination:
slight
inclination to the left.
at the lower border of **L4**.
here it gives 2 terminal branches.

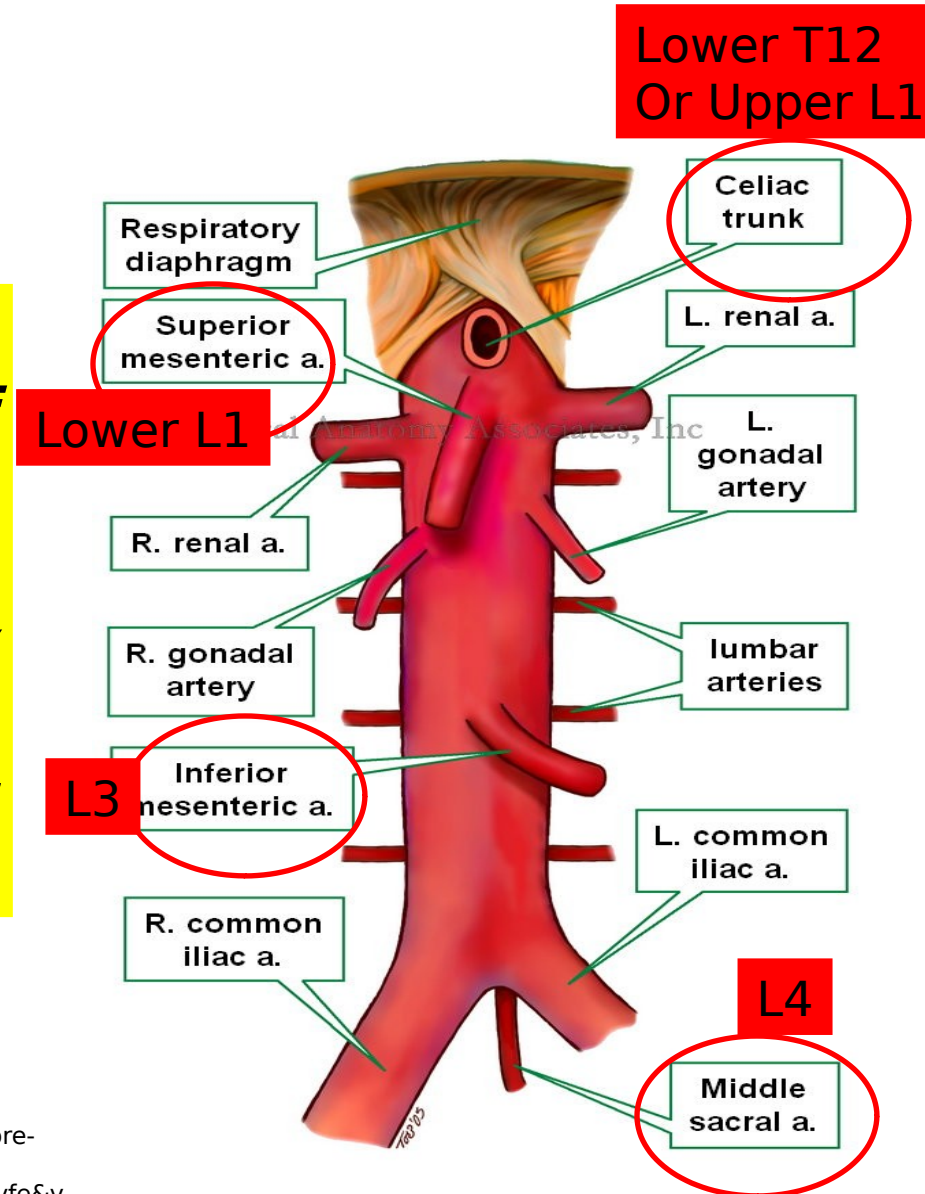
Common Iliac Arteries)



BRANCHES OF ABDOMINAL AORTA

Single Branches

The single branches arise from the front of the abdominal aorta EXCEPT the median sacral artery which arises from the back of the aorta just above its bifurcation.

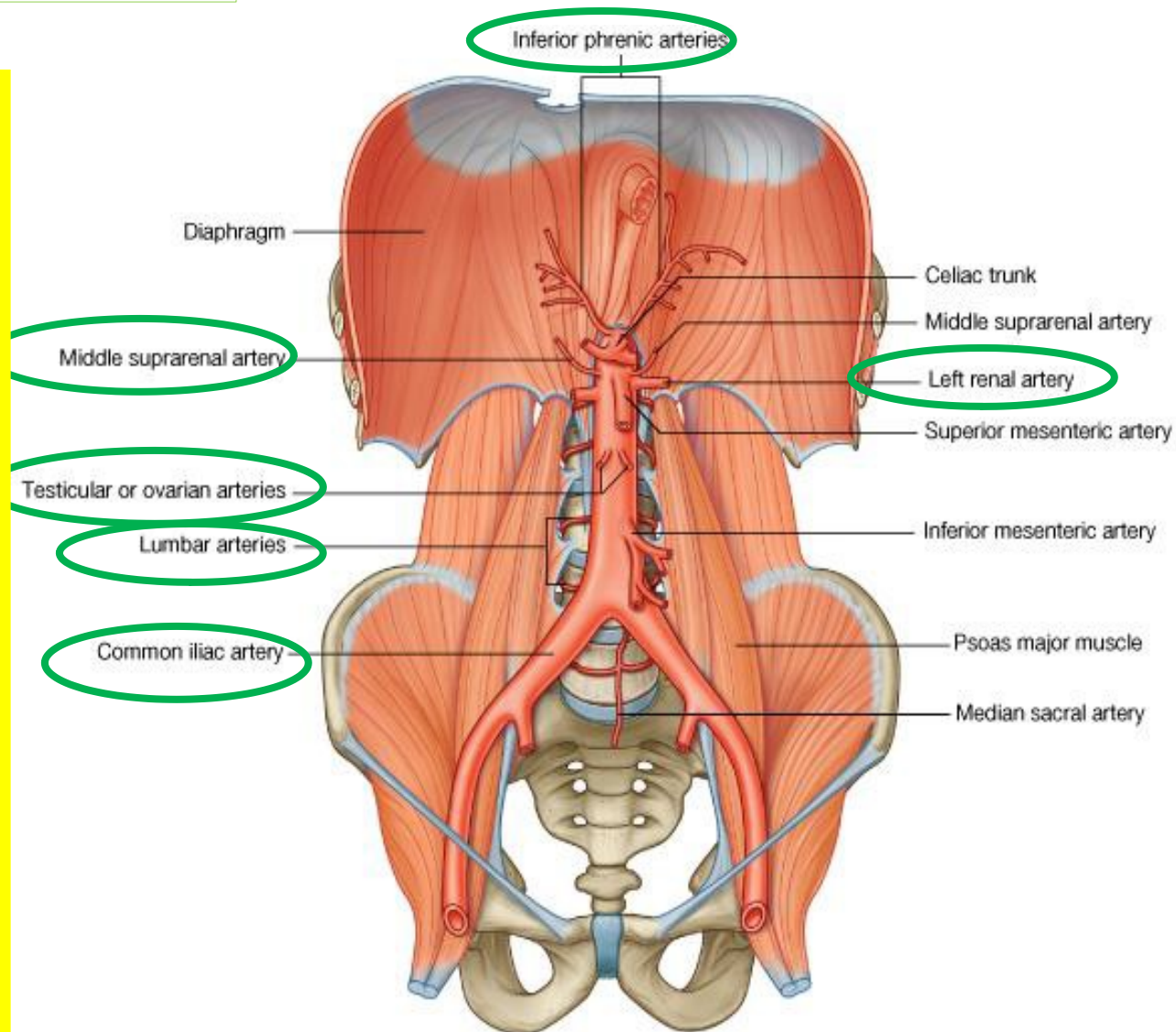


Paired Branches

The inferior phrenic
Gonadal
arteries **from**
the front

Middle
suprarenal
Renal arteries
(L2) **from the**
sides

Lumbar
arteries
from the back



Important relations of abdominal aorta

Anteriorly:

from above downwards:

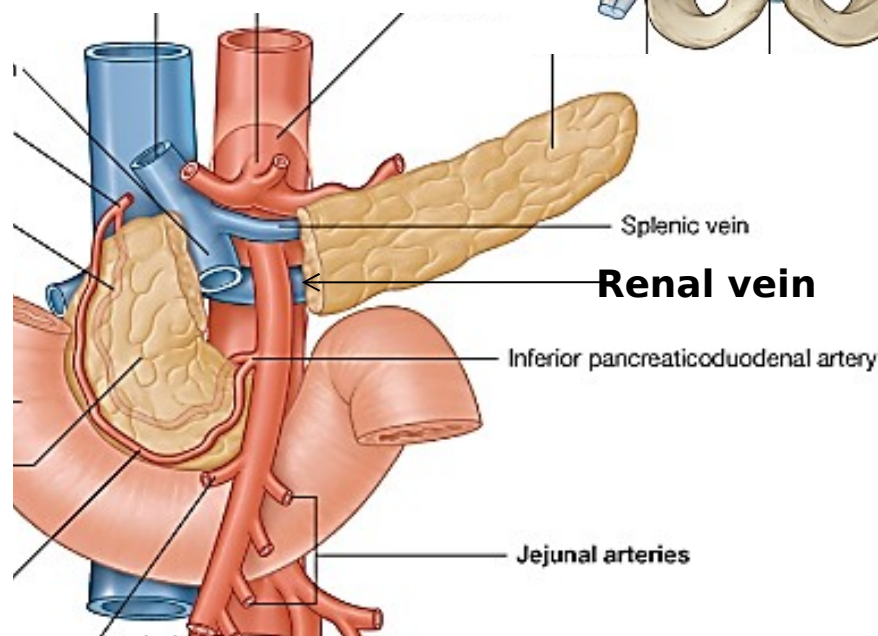
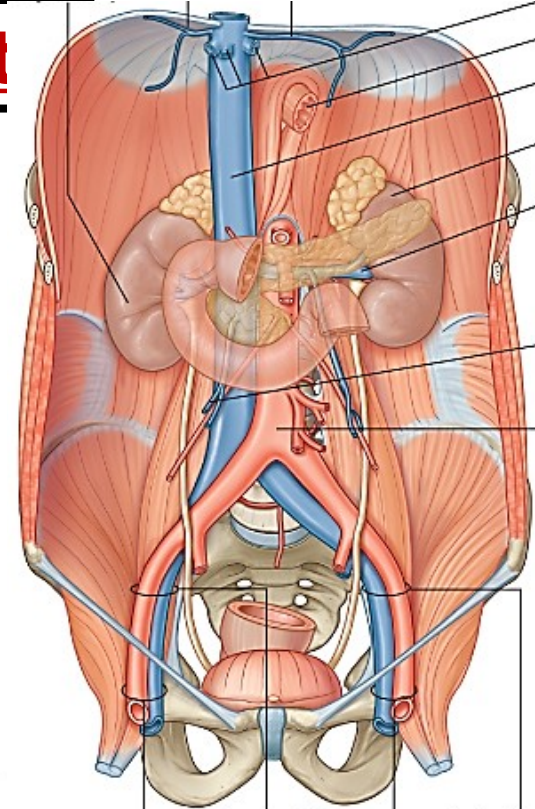
1. Coeliac trunk

2. Body & uncinate process of pancreas.

3. Splenic & left renal vein.

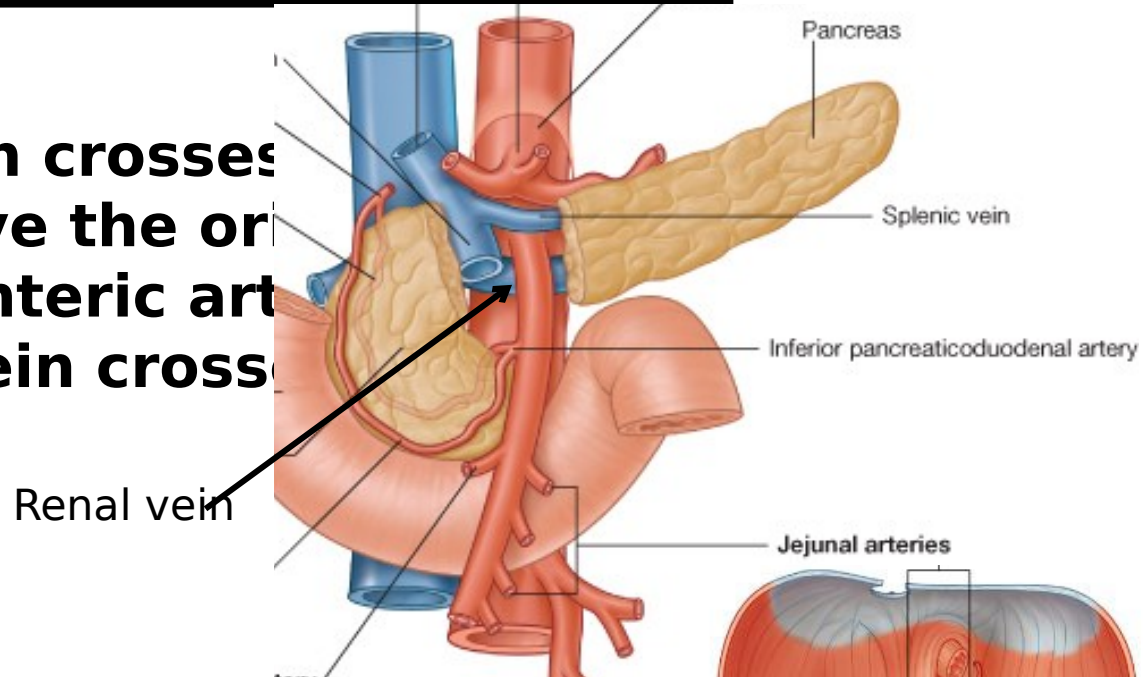
5. 3rd part of duodenum.

6. Root of mesentery & Superior mesenteric vessels & coils of SI.



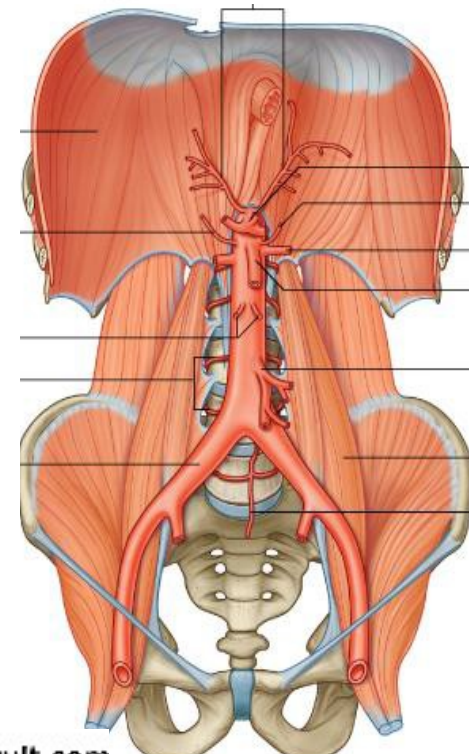
Important relations of abdominal aorta

Note: The splenic vein crosses abdominal aorta above the origin of the superior mesenteric artery while the left renal vein crosses



Posteriorly:

bodies of the upper four lumbar vertebrae.



Quiz 2 (abdominal aorta)



A single branch of abdominal aorta is:

- a. Suprarenal**
- b. Median sacral**
- c. Renal**
- d. Gonadal**
- e. Inferior phrenic**

Quiz 2 (abdominal aorta)



Which of the following are the correct vertebral levels for the celiac trunk, superior mesenteric, and inferior mesenteric arteries, respectively?

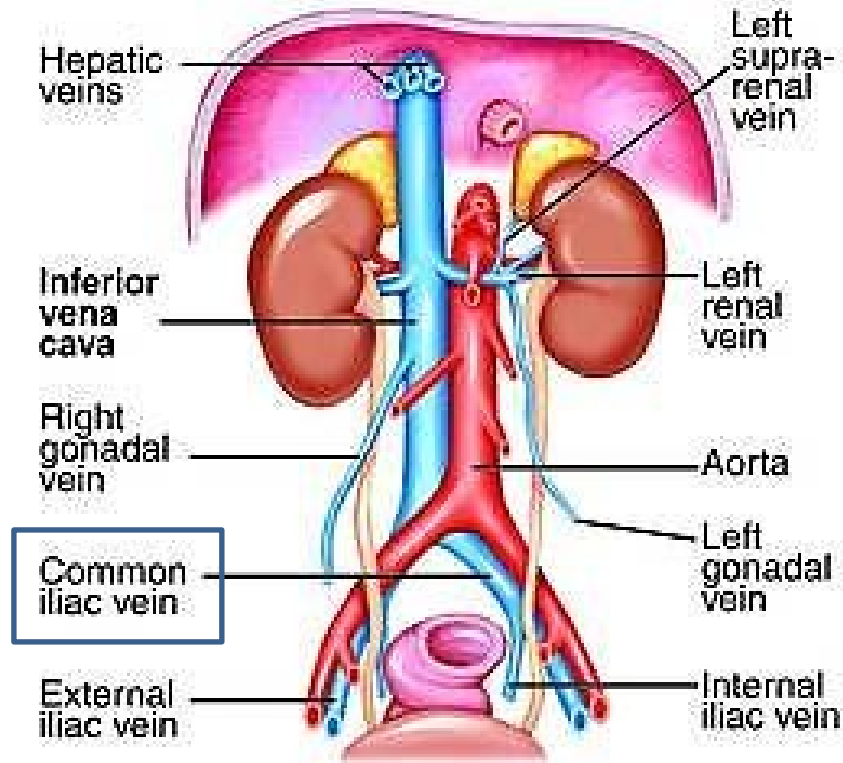
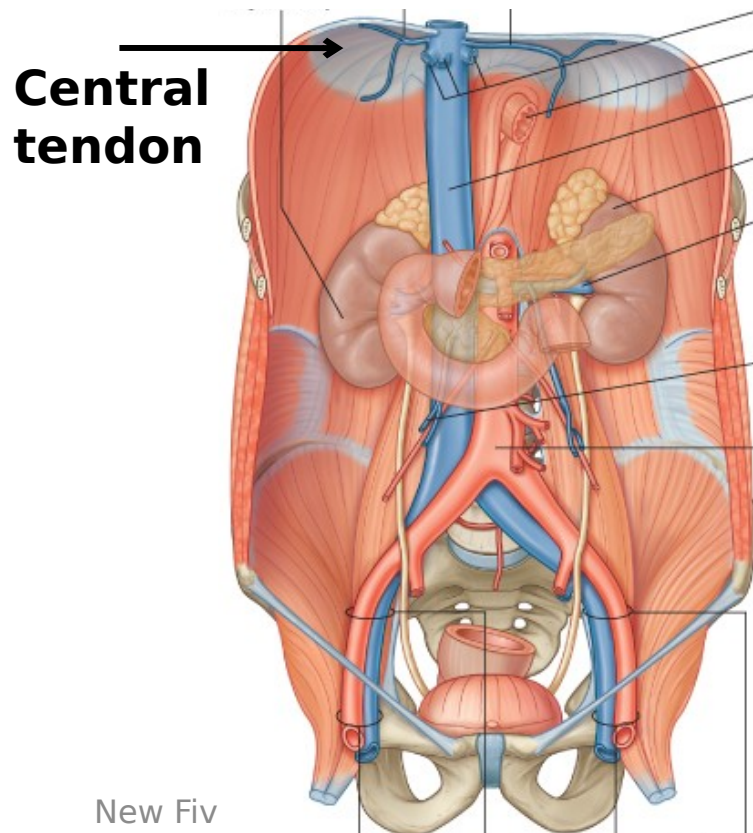
- a. T8, T9, T11**
- b. T9, T10, T12**
- c. T10, T11, L1**
- d. T11, T12, L2**
- e. T12, L1, L3**

IVC



Beginning:

**L5
FROM
2 COMMON ILIAC veins**



End:

**It pierce the CENTRAL
TENDON at T8 to end
in the right atrium**

Tributaries

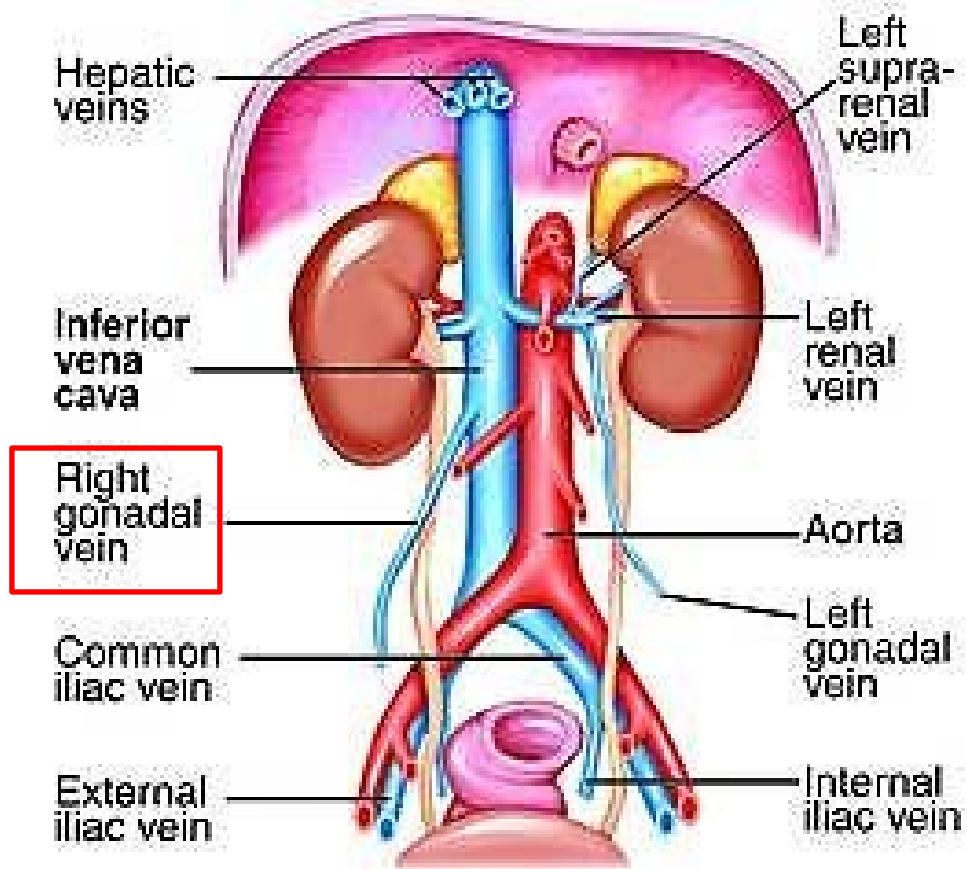
Common iliac veins
Lumbar veins

Right gonadal vein

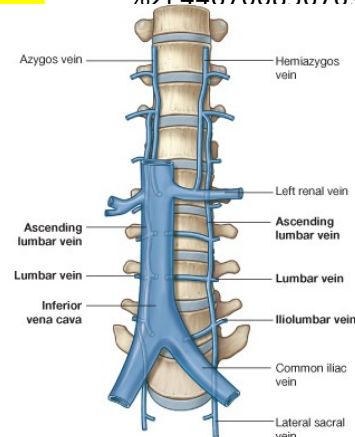
Right suprarenal vein
Renal veins

Inferior phrenic veins
Hepatic veins

**As Paired branch
Of aorta
+ Hepatic**



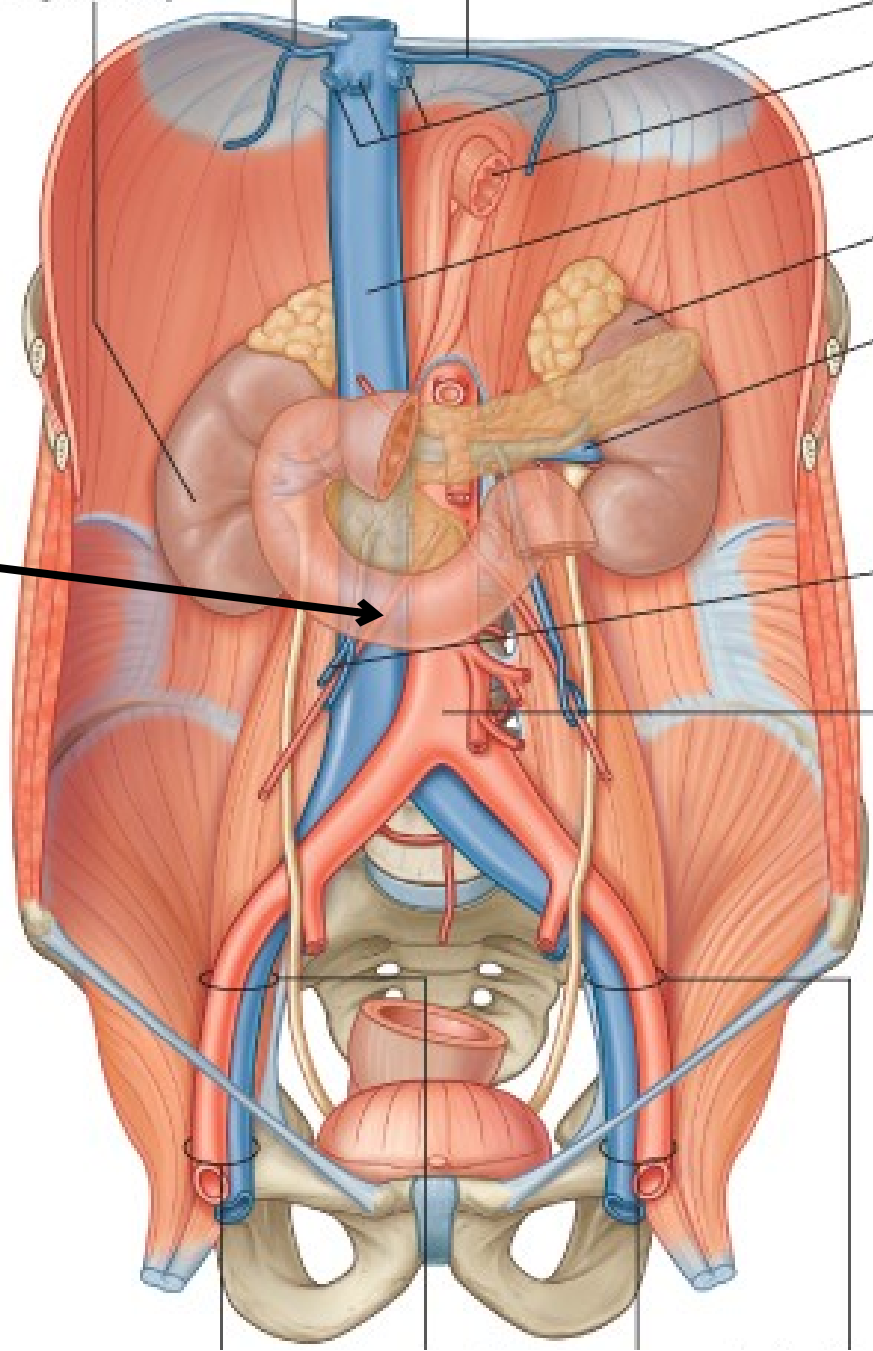
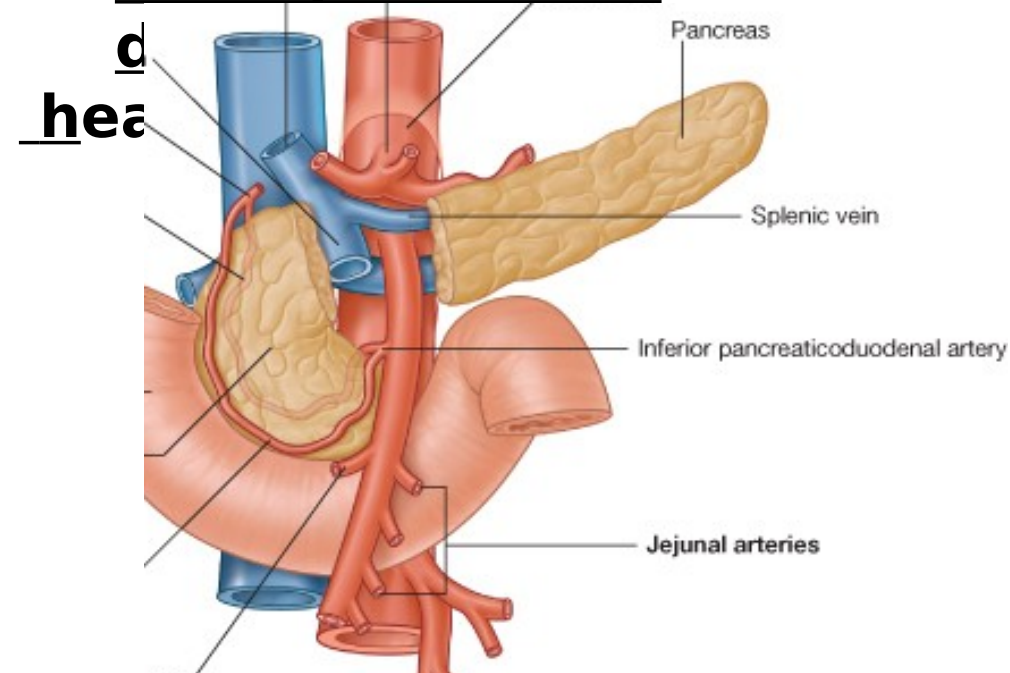
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Important relations of IVC

Anteriorly (from below upwards):

- 1. Right common iliac artery at its beginning.**
- 2. Root of mesentery with the superior mesenteric vessels.**
- 3. Third part of the**

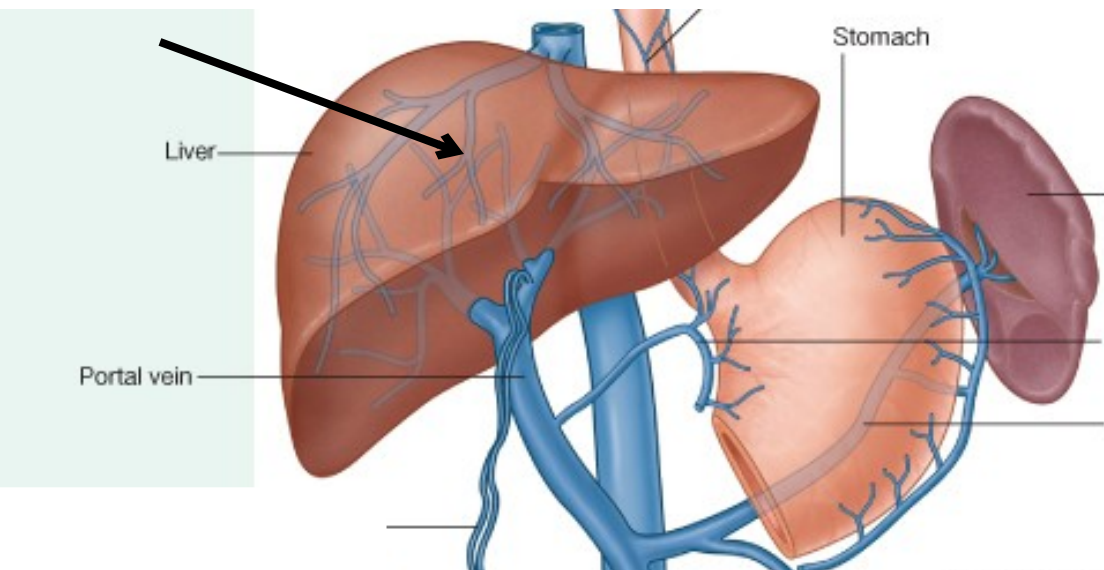


Important relations of IVC

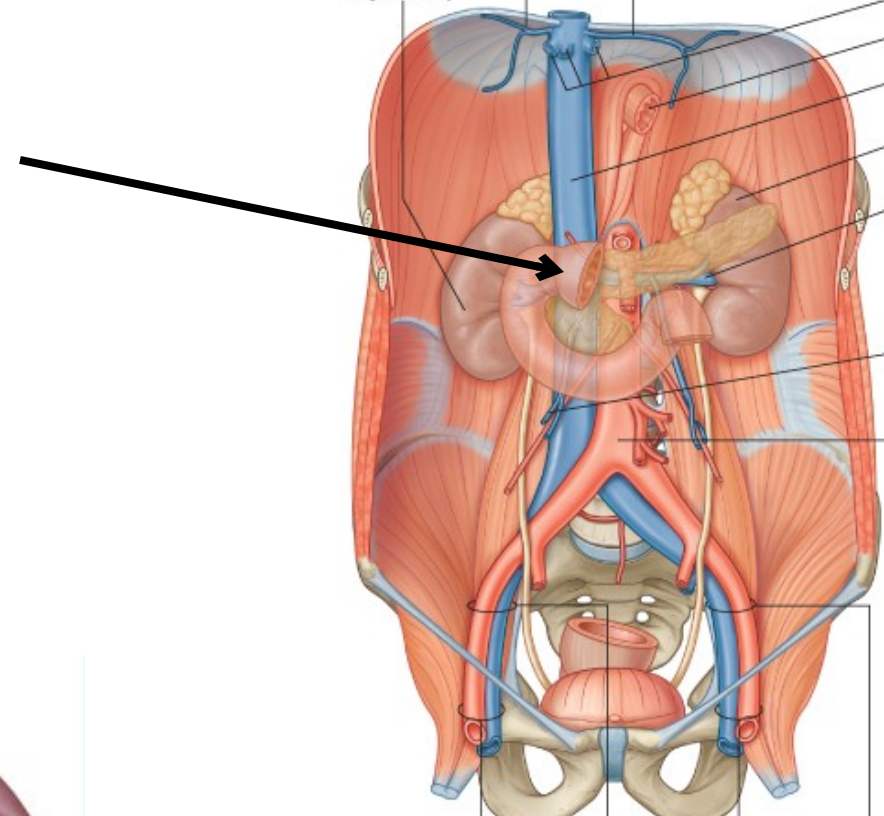
Anteriorly (from below upwards):

4. First part of the duodenum

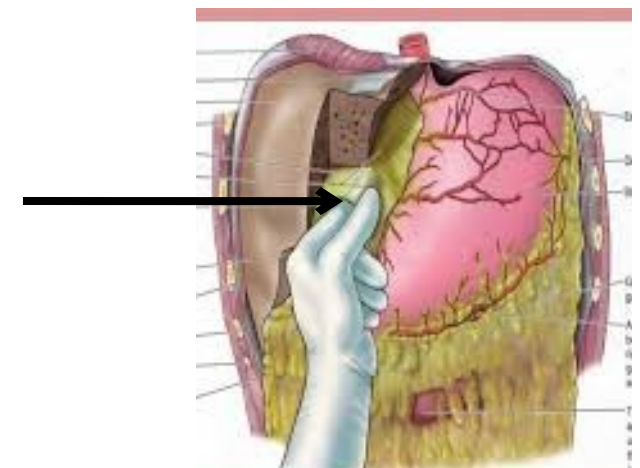
5. Opening into the lesser sac



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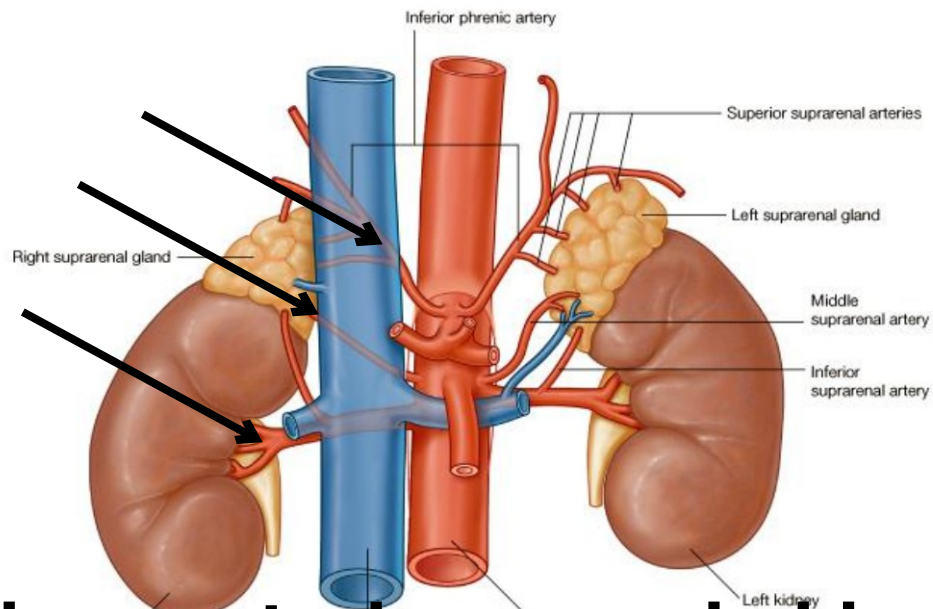
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Clinically oriented Anatomy, 5th edition, Keith Moore

Important relations of IVC

Posteriorly :



Three arteries cross behind I.V.C

- 1. Right renal artery.**
- 2. Right middle suprarenal artery.**
- 3. Right inferior phrenic artery.**

Quiz 3 (IVC)



One of the following veins is not a tributary of IVC:

- a. Left Hepatic**
- b. Right Hepatic**
- c. Left supra renal**
- d. Right supra renal**
- e. Right renal**

Summary



- Posterior abdominal wall muscles & Lumbar plexus
- Abdominal aorta
- IVC

SUGGESTED TEXTBOOKS



1. Clinical Anatomy by regions, Richard Snell, 9th. Edition pages 134-137 .
2. Atlas of human anatomy, Frank Netter, 4th.
Edition plates 263- 265.

GOOD LUCK